UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,736	12/05/2003	Vittorio Castelli	YOR920030355US1 (8728-642	1339

46069	7590	07/17/2006

F. CHAU & ASSOCIATES, LLC
130 WOODBURY ROAD
WOODBURY, NY 11797

EXAMINER
PHAM, THAI V

ART UNIT	PAPER NUMBER
2194	

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed , after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>05 December 2003</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/05/2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/05/2003*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

This is the initial office action based on the application filed on July 10, 2006. Claims 1 -
19 are currently pending and have been considered below.

Specification

1.   The disclosure is objected to because of the following informalities: typographical
errors. In numeral (3) of <u>Description of the Related Art</u> on page 1, the sentence is
incomplete: "...(i.e.".

Appropriate correction is required.

2.   The disclosure is objected to because of the following informalities: In the
Detailed Description of Preferred Embodiments on page 13 lines 18 – 19, the disclosure
refers to item 120 in Figure 1 which is not shown and identified in the drawing.
Appropriate correction is required.

3.   The disclosure is objected to because of the following informalities: In the
Detailed Description of Preferred Embodiments on page 17 lines 12 – 13, the phrase "*if
it two arguments*" is incomprehensible. The Examiner assumes that the phrase is
meant to read "*<u>with</u> it two arguments*" as the whole context of the sentence is taken into
consideration.

Appropriate correction is required.

Drawings

4.   Figure 1 in the drawing is objected to because of the following informalities: See

paragraph 2 in objection to Specification above.

Claim Objections

5.   Claims 6 and 7 are objected to because of the following informalities:

typographical error. The word "motonically" is a misspell of "monotonically" which was

used in the disclosure.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or
any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and
requirements of this title.

7.   Claim 19 is rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter.

        -- The Examiner notes that it appears that the Applicant is attempting to invoke

35 U.S.C. 112, 6th paragraph, with the use of means-plus-function language in the

claim. As disclosed in the specification of the application, each of the means for

performing the steps recited in the claim is constructed by a series of algorithmic steps

implemented in software program instructions. Thus, the claimed system is considered

a software program containing machine-executable instructions, per se (and not

associated with any physical structure); therefore, it is non-statutory according to 35

U.S.C 101.

Claim Rejections - 35 USC § 112

8.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1.   Claims 2 – 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "goodness" used in the claims as well as in the specification is indefinite due to its general and broad meaning. Further clarification of the term needs to be explicitly disclosed.

10.   Claim 7 is rejected under 35 U.S.C. 112, first paragraph, because the specification does not reasonably provide enablement for selecting an alignment and generalization from the all possible alignments and generalizations that maximizes a linearly increasing function of a goodness of alignment functional and a goodness of generalization functional. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with the claim. The Applicant never provides in the specification a description or illustration of how a linearly increasing function can be employed in the invention. For the purpose of further claim analysis under 35 U.S.C. 102 and 103, The Examiner assumes that "a linearly increasing function" bears the literal and general meaning of the term LINEARITY which, in this case, characterizes a set of parameter values subjected linear constraints optimizing a function that is linear in the parameter.

11.   Claim 10 is rejected under 35 U.S.C. 112, first paragraph, because the

specification does not reasonably provide enablement for selecting an alignment by

maximizing a goodness of alignment-generalization functional using a <u>gradient-descent</u>

<u>technique</u>. The specification does not enable any person skilled in the art to which it

pertains, or with which it is most nearly connected, to use the invention commensurate

in scope with the claim. The Applicant never provides in the specification a description

or illustration of how a <u>gradient-descent technique</u> can be employed in the invention.

For the purpose of further claim analysis under 35 U.S.C. 102 and 103, The Examiner

assumes that "<u>a gradient-descent technique</u>" being claimed uses the well-known and

conventional gradient descent algorithm commonly used in training predictor model in

optimization.

Examiner's Note

12.   The technical terminologies used in the claim language listed below are non-

conventional in the art of software development. The scope of a claim is thus limited to

the definitions of these terminologies as they are explicitly defined in the disclosure of

the application.

-- <u>A procedure</u>: a desired task that can be executed by a program with limited

intervention of the user and is commonly performed.

-- <u>A procedural instance</u>: a specific execution of a procedure by a user.

-- <u>A Trace</u>: a product of recording one instance of a procedure performed by a user.

-- <u>Alignment</u>: identifying sets of steps that are equivalent once generalized.

-- <u>Generalization</u>: producing an abstract description that may include one or more ways

of explaining or predicting the differences between the individual steps belong to a set.

13.   The Examiner notes that it appears that the Applicant is attempting to invoke 35

U.S.C. 112, 6th paragraph in Claim 19, with the use of means-plus-function language in

the claim. As disclosed in the specification of the application, each of the means for

performing the steps of the system recited in the claim is constructed by a series of

algorithmic steps implemented in software program instructions. Thus, the specification

does not provide any specific physical structure for the features that could be read into

the claim to limit the scope of the means for the components or steps constituting the

claimed system. Therefore, The Examiner does not consider the specification to be

adequate to invoke a 35 U.S.C. 112, 6th paragraph interpretation and furthermore, for

the purpose of further claim analysis under 35 U.S.C. 102 and 103, The Examiner treats

Claim 19 as a computer program containing machine-readable instructions stored on a

physical medium for performing the steps recited in the claim.

Claim Rejections - 35 USC § 102

14.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15.   Claims 1 – 19 are rejected under 35 U.S.C. 102(b) as being anticipated by

Bellegarda (5,644,652).

-- <u>Claims 1, 18 and 19</u>: **Bellegarda** discloses a method and a machine-readable medium having instructions stored threreon for generating one or more computer-executable procedures, comprising the steps of:

- recording at least one trace of at least one instance of a procedure (receiving character or stroke information produced by a user using the stylus – procedure is the capturing of character or stroke; Fig. 2, page 5 lines 24 – 32);

- simultaneously performing an alignment and generalization of the at least one trace (data is sorted by independent writer and Viterbi aligned for each writer; Figs. 6 – 7, page 9 line 59 – page 11 line 49); and

- generating the one or more computer-executable procedures consistent with the alignment and generalization (Fast Match and Detailed Match; Fig. 5, page 8 line 42 – page 9 line 48).

-- <u>Claim 2</u>: **Bellegarda** discloses the method of claim 1, wherein simultaneously performing an alignment and generalization of the at least one trace further comprises the steps of:

- computing all possible alignments and generalizations of the at least one trace (Viterbi alignments for independent writers; Figs. 6, page 9 line 59 – page 10 line 27); and

- selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a goodness of alignment-generalization functional (Tree construction and prunning to computer mixture coefficients for each fenone which are used in Fast and Detailed Matches; Figs. 7 – 9, page 10 line 28 – page 13 line 29).

-- <u>Claim 3</u>: **Bellegarda** discloses the method of claim 2, wherein selecting the alignment

and the generalization from the all possible alignments and generalizations that

maximizes a goodness of alignment-generalization functional comprises selecting the

alignment and the generalization from the all possible alignments and generalizations

that maximizes a goodness of alignment functional (Fig. 6, page 9 line 59 – page 10 line

27) and a goodness of generalization functional (Figs. 8 – 9, page 11 line 50 – page 13

line 29).

-- <u>Claim 4</u>: **Bellegarda** discloses the method of claim 3, wherein selecting the alignment

and the generalization from the all possible alignments and generalizations that

maximizes a goodness of alignment functional and a goodness of generalization

functional comprises selecting the alignment and the generalization from the all possible

alignments and generalizations that maximizes a goodness of alignment functional

equal to a sum of steps correctly predicted by a procedure model (Viterbi alignments for

independent writers; Figs. 6, page 9 line 59 – page 10 line 27).

-- <u>Claim 5</u>: **Bellegarda** discloses the method of claim 3, wherein selecting the alignment

and the generalization from the all possible alignments and generalizations that

maximizes a goodness of alignment functional and a goodness of generalization

functional comprises selecting the alignment and the generalization from the all possible

alignments and generalizations that maximizes a goodness of generalization functional

that is equal to a sum of steps correctly generalized by a procedure model (Tree

construction and pruning for each distinct input vectors; Figs. 8 – 9, page 11 line 50 –

page 13 line 29).

-- Claim 6: **Bellegarda** discloses the method of claim 2, wherein selecting the alignment

and the generalization from the all possible alignments and generalizations that

maximizes a goodness of alignment-generalization functional comprises selecting the

alignment and the generalization from the all possible alignments and generalizations

that maximizes a monotonically increasing function of a goodness of alignment

functional and a goodness of generalization functional (constructing a Tree with

maximized distance between centroid pairs and pruning a Tree with a number of leaf

above a desired threshold; Figs. 8 – 9, page 11 line 50 – page 13 line 29).

-- Claim 7: **Bellegarda** discloses the method of claim 6, wherein selecting the alignment

and the generalization from the all possible alignments and generalizations that

maximizes a monotonically increasing function of a goodness of alignment functional

and a goodness of generalization functional comprises selecting the alignment and the

generalization from the all possible alignments and generalizations that maximizes a

linearly increasing function of a goodness of alignment functional and a goodness of

generalization functional (a well-known maximum likelihood algorithm; page 9 lines 32 –

35).

-- Claim 8: **Bellegarda** discloses the method of claim 1, wherein simultaneously

performing an alignment and generalization of the at least one trace further comprises

selecting an alignment and generalization by maximizing a goodness of alignment-generalization functional using an optimization technique (constructing a Tree with maximized distance between centroid pairs and pruning a Tree with a number of leaf above a desired threshold; Figs. 8 – 9, page 11 line 50 – page 13 line 29).

-- Claim 9: **Bellegarda** discloses the method of claim 8, wherein selecting an alignment and generalization by maximizing a goodness of alignment-generalization functional using an optimization technique comprises selecting an alignment by maximizing a goodness of alignment-generalization functional using an iterative optimization technique (constructing a Tree with maximized distance between centroid pairs and pruning a Tree with a number of leaf above a desired threshold; Figs. 8 – 9, page 11 line 50 – page 13 line 29).

-- Claim 10: **Bellegarda** discloses the method of claim 9, wherein selecting an alignment by maximizing a goodness of alignment-generalization functional using an iterative optimization technique comprises selecting an alignment by maximizing a goodness of alignment-generalization functional using a gradient-descent technique (a well-known maximum likelihood algorithm; page 9 lines 32 – 35).

-- Claim 11: **Bellegarda** discloses the method of claim 1, wherein simultaneously performing an alignment and generalization of the at least one trace further comprises the steps of:

• computing an initial alignment and generalization of the at least one trace (Viterbi alignments for independent writers; Figs. 6, page 9 line 59 – page 10 line 27);

      • generating a procedure model of the initial alignment (supervision technique;

Fig. 7, page 11 lines 1 – 49); and

      • computing a best alignment and generalization of the procedure model (Fast

and Detail Matches in Decoding Phase; Fig. 5, page 8 line 42 – page 9 line 48).

-- <u>Claim 12</u>: **Bellegarda** discloses the method of claim 11, further comprising the step

of: repeating the steps of determining the initial alignment, generating the procedure

model, and determining the best alignment until a local optimum is detected (identifying

the character with associated top score in Fast and Detail Matches in Decoding Phase;

Fig. 5, page 8 line 42 – page 9 line 48).

-- <u>Claim 13</u>: **Bellegarda** discloses the method of claim 11, wherein generating a

procedure model of the initial alignment comprises generating a Hidden Markov Model

of the initial alignment (writer-independent Hidden Markov Models; Figs. 6, page 9 line

59 – page 10 line 27).

-- <u>Claim 14</u>: **Bellegarda** discloses the method of claim 13, wherein generating a Hidden

Markov Model of the initial alignment comprises generating an Input/Output Hidden

Markov Model of the initial alignment (The Applicant explicitly discloses that if

generalization is ignored, the Hidden Markov Model is equivalent to Input-Output

Hidden Markov Model. Alternatively stated, if the state of the computer system at a

specific step is interpreted as input and the user action as output, then each model node

n has two associated functions; transition and output functions. <u>The transition function</u>

<u>yields a probabilistic assignment of the current step over the nodes given the input at</u>

the current step and that the previous node is _n_. The output function yields a

probabilistic assignment of the current user action over all possible user actions given

the input at the current user action over all possible user actions given the input at the

step and that the current node is _n_. Items 701 + 619 and 703 – 709 of Fig. 7 meet the

above stated requirements for IOHMM; Fig. 7, page 11 lines 1 – 49).

-- Claim 15: **Bellegarda** discloses the method of claim 1, wherein simultaneously

performing an alignment and generalization of the at least one trace further comprises

the steps of:

• determining an initial alignment and generalization of the at least one trace

(Viterbi alignments for independent writers; Figs. 6, page 9 line 59 – page 10 line 27);

• generating a transition model and an action model of the initial alignment and

generalization (supervision technique; Fig. 7, page 11 lines 1 – 49); and

• determining a best alignment of the transition model and the action model (Fast

and Detail Matches in Decoding Phase; Fig. 5, page 8 line 42 – page 9 line 48).

-- Claim 16: **Bellegarda** discloses the method of claim 15, wherein further comprising

the step of: repeating the steps of determining the initial alignment, generating the

transition model and the action model, and determining the best alignment until a

convergence is detected (Fast and Detail Matches in Decoding Phase; Fig. 5, page 8

line 42 – page 9 line 48).

-- Claim 17: **Bellegarda** discloses the method of claim 15, wherein generating a

transition model and an action model of the initial alignment and generalization

comprises generating a transition model for at least one node and an action model for the at least one node (The transition and action functions are explicitly defined in the disclosure as follows. The transition function yields a probabilistic assignment of the current step over the nodes given the input at the current step and that the previous node is n. The output function yields a probabilistic assignment of the current user action over all possible user actions given the input at the current user action over all possible user actions given the input at the step and that the current node is n. Items 701 + 619 and 703 – 709 of Fig. 7 meet the above stated requirements for IOHMM; Fig. 7, page 11 lines 1 – 49).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Larsson** et al. (6,948,157), **Virtutech AB**: **Larsson** discloses a computer program interpreter and a method for the using statistics to group frequently used service routines (SR) in the same program function and to control encoding of instructions. Frequently used SR's are assigned shorter codes thus enhancing the performance of a simulator or emulator.
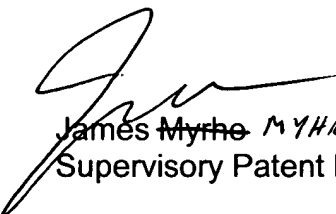
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai Van Pham whose telephone number is (571) 270-1064. The examiner can normally be reached on Monday - Thursday, 9am - 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, James Myhre can be reached on (571) 270-1065. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

Customer Service Representative or access to the automated information system, call

800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TVP

James Myhre MYHRE
Supervisory Patent Examiner